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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/627,191	07/27/2000	Srihari Adireddy	PHA 23,837	1207

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EXAMINER
KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/627,191	ADIREDDY ET AL.
	Examiner	Art Unit
	Pankaj Kumar	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>27 July 2000</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,9 and 17</u> is/are rejected.

7) ☒ Claim(s) <u>2-8,10-16 and 18-20</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>7/27/2000</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Specification

1.   The abstract of the disclosure is objected to because:

   a.   It should not contain legal terminology such as the word "comprises".

   b.   It should not include a title.

2.   Please enter the US application number or patent number or publication number for the cross-referenced applications.

3.   Correction is required. See MPEP § 608.01(b).

Claim Objections

1.   Claims 1-8, 17-20 are objected to because of the following informalities:

2.   Claim 1 line 5: "therein" is objected to since it seems to be referring to the first receiver but it is not clear as to that.

3.   Claim 1 line 5 recites "a precursor ISI signal" and then lines 12-13 recite "a first precursor ISI signal". This is objected to since the relationship between the two is not clear. Are there two different precursor ISI signals or are they the same?

4.   Claim 1 lines 13-14 recite "a second transmitted prior to said first known symbol". This is objected to since the words after "prior to" should be some type of measure such as a measure of time or distance for it to make sense and "first known symbol" is not a type of measure. Was it supposed to mean that the second symbol is transmitted prior to when said first known symbol is transmitted? This is similarly objected to in claim 17 lines 12-13.

5.   Claim 1 part 1 has a DFE working on the stream of distorted known and unknown

symbols from the transmitter while part 2 has the same DFE working on data from a known

symbol generator. Thus, it appears that the work the DFE does in part 1 does not affect the work

the DFE does in part 2 and vice versa. Hence, the claim is objected to since there is a disconnect

between parts 1 and 2 of the DFE in the receiver. This is similarly objected to in claim 17.

6.   Appropriate correction is required.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

8.   Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nobakht USPN

5,692,011 in view of Suzuki USPN 5,602,484 and Javerbring USPN 6,269,116. Here is how the

references teach the claim:

9.   As per claim 1: A transmitter capable of transmitting a stream of known symbols and

unknown symbols through a transmission channel to a first receiver that receives said transmitted

stream known symbols and unknown symbols distorted by intersymbol interference (ISI) and

reduces therein a precursor ISI signal, wherein said first receiver comprises (limitations of the

preamble are discussed in the remainder of the claim) 1) a decision feedback equalizer (Nobakht

fig. 6: 611, 605, 623) for receiving said stream of distorted known symbols (Nobakht fig. 6: input

into 603 is distorted as it is from the channel; distorted symbols are input into the trainer system

675 and they are known at the output of 676 as a trainer has to know in order to train) and

distorted (Nobakht fig. 6: input into 601 is distorted as it is from the channel) unknown symbols

(Nobakht fig. 6: data into 695 is unknown as it needs to be trained) and generating sequence

detected symbols (Nobakht fig. 6: a(k)) and 2) a known symbol generator (Nobakht fig. 6: 675)

for generating a copy of a first known symbol (Nobakht fig. 6: output of 613 goes to 605 and a

copy of it goes to the summer in 675) prior to an estimation of said first known symbol by said

decision feedback equalizer (Nobakht fig. 6: copy of output of 613 is made to go into the

summer in 675 before the output of 613 is estimated in 695), said decision feedback equalizer

using said copy of said first known symbol (Nobakht fig. 6: left input into 605) to reduce a first

precursor ISI signal (Nobakht fig. 6: output of 605 is meant to reduce ISI in y1(k); col. 1 line 47)

in a second symbol transmitted prior to said first known symbol (Nobakht fig. 6: second input

into 601 will occur prior to the output of 613 as the output of 613 is generated after going

through a number of elements), wherein the transmitter (Nobakht fig. 7: transmitter) comprises: a

known symbol (Nobakht col. 2 lines 41-42: transmitted symbols which have to be known aprior)

distribution controller capable of inserting a plurality of known symbols into an outgoing stream

of unknown symbols in an optimum distribution in order to improve the performance of said first

receiver (not in Nobakht but would be obvious as explained below).

10.   Although Nobakht teaches ISI, it does not teach precursor ISI. Javerbring teaches

precursor ISI (Javerbring col. 3 lines 45-51; col. 4 line 13). Thus, it would have been obvious, to

one of ordinary skill in the art, at time the invention was made, to arrive at the precursor ISI as

recited by the instant claims, because the combined teaching of Nobakht with Javerbring suggest

precursor ISI as recited by the instant claims. Furthermore, one of ordinary skill in the art, would

have been motivated to combine the teachings of Nobakht with Javerbring because Nobakht

suggests ISI (something broad) in general and Javerbring suggests the beneficial use of reducing

precursor ISI such as being more efficient in terms of not having to reduce both post cursor and

precursor ISI is post cursor ISI does not pose a problem in the analogous art of reducing ISI.

11.   Nobakht does not teach distribution controller capable of inserting a plurality of known

symbols into an outgoing stream of unknown symbols in an optimum distribution in order to

improve the performance of said first receiver. Suzuki teaches distribution controller capable of

inserting a plurality of known symbols into an outgoing stream of unknown symbols (Suzuki fig.

4: training signal or known symbols are inserted in to signal with unknown symbols or data; col.

4 line 62: symbol) in an optimum distribution in order to improve the performance of said first

receiver (Suzuki col. 5 lines 64-66). Thus, it would have been obvious, to one of ordinary skill

in the art, at time the invention was made, to arrive at the distribution controller capable of

inserting a plurality of known symbols into an outgoing stream of unknown symbols in an

optimum distribution in order to improve the performance of said first receiver as recited by the

instant claims, because the combined teaching of Nobakht with Suzuki suggest distribution

controller capable of inserting a plurality of known symbols into an outgoing stream of unknown

symbols in an optimum distribution in order to improve the performance of said first receiver as

recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been

motivated to combine the teachings of Nobakht with Suzuki because Nobakht suggests training

(something broad) in general and Suzuki suggests the beneficial use of inserting training symbols

such as providing a short time highly accurate measurement (Suzuki col. 2 lines 66-67) in the

analogous art of training.

12.   Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobakht

USPN 5,692,011 in view of Suzuki USPN 5,602,484, Javerbring USPN 6,269,116, and Pite

USPN 6,167,276. Here is how the references teach the claims:

13.   The above discussion of claim 1 applies for the remaining independent claims 9, 17 also.

Here is a repeat of that discussion:

14.   As per claims 9 and 17: 1) a decision feedback equalizer (Nobakht fig. 6: 611, 605, 623)

for receiving said stream of distorted known symbols (Nobakht fig. 6: input into 603 is distorted

as it is from the channel; distorted symbols are input into the trainer system 675 and they are

known at the output of 676 as a trainer has to know in order to train) and distorted (Nobakht fig.

6: input into 601 is distorted as it is from the channel) unknown symbols (Nobakht fig. 6: data

into 695 is unknown as it needs to be trained) and generating sequence detected symbols

(Nobakht fig. 6: a(k)) and 2) a known symbol generator (Nobakht fig. 6: 675) for generating a

copy of a first known symbol (Nobakht fig. 6: output of 613 goes to 605 and a copy of it goes to

the summer in 675) prior to an estimation of said first known symbol by said decision feedback

equalizer (Nobakht fig. 6: copy of output of 613 is made to go into the summer in 675 before the

output of 613 is estimated in 695), said decision feedback equalizer using said copy of said first

known symbol (Nobakht fig. 6: left input into 605) to reduce a first precursor ISI signal

(Nobakht fig. 6: output of 605 is meant to reduce ISI in y1(k); col. 1 line 47) in a second symbol

transmitted prior to said first known symbol (Nobakht fig. 6: second input into 601 will occur

prior to the output of 613 as the output of 613 is generated after going through a number of

elements), wherein the transmitter (Nobakht fig. 7: transmitter) comprises: a known symbol

(Nobakht col. 2 lines 41-42: transmitted symbols which have to be known aprior) distribution controller capable of inserting a plurality of known symbols into an outgoing stream of unknown symbols in an optimum distribution in order to improve the performance of said first receiver (not in Nobakht but would be obvious as explained below).

15.   Although Nobakht teaches ISI, it does not teach precursor ISI. Javerbring teaches precursor ISI (Javerbring col. 3 lines 45-51; col. 4 line 13). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the precursor ISI as recited by the instant claims, because the combined teaching of Nobakht with Javerbring suggest precursor ISI as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Nobakht with Javerbring because Nobakht suggests ISI (something broad) in general and Javerbring suggests the beneficial use of reducing precursor ISI such as being more efficient in terms of not having to reduce both post cursor and precursor ISI is post cursor ISI does not pose a problem in the analogous art of reducing ISI.

16.   Nobakht does not teach distribution controller capable of inserting a plurality of known symbols into an outgoing stream of unknown symbols in an optimum distribution in order to improve the performance of said first receiver. Suzuki teaches distribution controller capable of inserting a plurality of known symbols into an outgoing stream of unknown symbols (Suzuki fig. 4: training signal or known symbols are inserted in to signal with unknown symbols or data; col. 4 line 62: symbol) in an optimum distribution in order to improve the performance of said first receiver (Suzuki col. 5 lines 64-66). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the distribution controller capable of inserting a plurality of known symbols into an outgoing stream of unknown symbols in an

optimum distribution in order to improve the performance of said first receiver as recited by the

instant claims, because the combined teaching of Nobakht with Suzuki suggest distribution

controller capable of inserting a plurality of known symbols into an outgoing stream of unknown

symbols in an optimum distribution in order to improve the performance of said first receiver as

recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been

motivated to combine the teachings of Nobakht with Suzuki because Nobakht suggests training

(something broad) in general and Suzuki suggests the beneficial use of inserting training symbols

such as providing a short time highly accurate measurement (Suzuki col. 2 lines 66-67) in the

analogous art of training.

17.   Also, for claims 9 and 17, Nobakht does not teach multiple receivers. Pite 6167276

teaches multiple receivers (Pite col. 8 line 20: "multiple receivers"; line 35: "three base

transceiver stations BTS1 to BTS3"). Thus, it would have been obvious, to one of ordinary skill

in the art, at time the invention was made, to arrive at the multiple receivers as recited by the

instant claims, because the combined teaching of Nobakht with Pite suggest multiple receivers as

recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been

motivated to combine the teachings of Nobakht with Pite because Nobakht suggests receiver

(something broad) in general and Pite suggests the beneficial use of multiple receivers such as

that taught in Pite col. 8 lines 11-22 in the analogous art of receiver.

Allowable Subject Matter

18.   Claims 2-8, 10-16, 18-20 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The

examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pankaj Kumar
Primary Examiner
Art Unit 2611

PK